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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,224	12/18/2001	Shoji Fukutomi	217288US8	5719

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EXAMINER

AHMED, SALMAN

ART UNIT PAPER NUMBER

2666

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,224

Applicant(s)

FUKUTOMI, SHOJI

Examiner

Salman Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/18/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 5 and 8 are objected to because of the following informalities:

Claim 5 line ³¹24, the word "packet" should be changed to --port--

Claim 8 line ³⁸27, the word "packet" should be changed to --port--

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

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Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 2, 3, 5, 7, 8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Akahane et al. (US PAT 6778532).

Akahane teaches (in regards to claims 1 and 8) a network (network shown in FIG. 2) interconnection method/system for connecting a plurality of receiver hosts (column 8 line 20, terminals T11, T12, T21, T22, T31, T32, T41, T422, T51, T52) and a backbone network (Fig 2 element P11) through first and second relay units (Fig 2 elements R1 and (R2 or R3)) and relaying a packet wherein

(in regards to claim 1 and 8) receiver hosts build virtual network (Fig 2 elements SN2, SN3, SN4 or SN5) receiving a multicast packet;

when receiving packet from the backbone network, first relay unit determines whether the packet is the multicast packet (column 9 line 49, receiver multicast group address) , specifies the virtual network to the packet and specifies a port of said second relay unit to which the virtual network belongs if the packet is the multicast packet, and transfers the packet to the specified port (column 9 lines 59-67, the router R2 received the multicast packet from the router R1 performs a check similar to the router R1 so that it can recognize that the sender terminal T11 of the multicast packet is on-the sub-

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network SN1, and the router R2 decides the transmission ports P22 and P23 and outputs a copy of the packet from these ports, in order to transmit the packet from the sub-networks SN2 and SN3 having the terminal belonging to the receiver multicast address); and

second relay unit receives the transferred packet, determines whether the packet is the multicast packet, and, if the packet is the multicast packet, transfers the multicast packet to ports to which the respective receiver hosts building the virtual network are connected (column 10 lines 1-3, similarly, the router R3 decides the ports P34 and P35 and outputs a copy of the packet received via the router R1 from these ports).

In regards to claim 2, Akahane teaches receiver hosts build the virtual network for each multicast group and build the virtual network for receiving all multicast packets (Fig 2 elements SN2, SN3, SN4 or SN5 and column 8 line 9, multicast group);

In regards to claim 3, Akahane teaches (column 10 lines 6-24, when a multicast packet is input to the input port 11-i, the routing unit 13-i searches a multicast routing table by using as a key the sender IP address and receiver IP address (receiver multicast address) in the header of the packet. With this search, the number (transmission port number) or numbers of one or a plurality of output ports 12-i are decided, and a copy of the received packet added with each transmission port number is sent to the switch 14. The switch 14 switches the packet to the communication control unit 15-i having the

output port 12-i corresponding to each transmission port number. The communication control-unit 15-i received the switched packet generates a multicast MAC address of the data link layer by using the receiver multicast address in-the header of the multicast packet, adds the MAC address to the packet as the receiver MAC address, and sends the packet to the output port 12-i corresponding to each transmission port number, as different from the case of the unicast packet) in the network interconnection method, the virtual network is specified by adding or not adding an identifier to the packet.

In regards to claim 5, Akahane teaches first/second determination unit which determines whether packet received from the backbone network is multicast packet (Figure 1 element 200 and column 11 lines 17-19, the route search processing circuit 200 search the multicast routing table stored in the memory);

(In regards to claims 5, 7, 8 and 10) a specifying unit which specifies the virtual network the packet according to a determination result of the determination unit (Figure 1 element 504 and column 11 lines 25-27, the transfer processing unit 504 rewrites the packet header of the packet stored in the memory 503, adds one of the N transmission port numbers to the packet);

(In regards to claims 5 and 8) a first/second storage unit which stores information on the virtual network and information on a port of said second relay unit to which the virtual

network belongs (Figure 1 element 300 and column 11 lines 18-19, multicast routing table stored in the memory 300); and

(In regards to claims 5 and 8) a first/second transfer unit which retrieves the port of the second relay unit to which the virtual network belongs from a content of the storage unit, and transfers the packet the retrieved port (column 11 lines 40-44, the communication control unit generates the multicast MAC address from the receiver multicast address in the header of the packet, adds the receiver MAC address to the packet, and transmits the packet to each network).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akahane in view of Garff et al (US PAT PUB 2002/122390), hereinafter referred to as Garff.

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Akahane teaches a method/system of routing multicast packets as described in the rejections of claims 1, 5 and 8 above.

Akahane does not explicitly teach third relay unit having an IGMP proxy function is provided between said second relay unit and the receiver hosts; third relay unit transmits an IGMP membership report from each of receiver host to second relay unit and second relay unit forwards the multicast packet a port receiving the membership report.

Garff teaches (page 1 section 0004) the new class of nodes hereinafter referred to as IP multicast queriers, send IGMP membership queries but do not participate in IP multicast routing protocols. An IP multicast querier may be, for instance, a local area network (LAN) switch that learns the multicast group membership of LAN-attached IP hosts in order to report such multicast groups by proxy to IP multicast routers and to avoid unnecessary flooding of IP multicast traffic received from such IP multicast routers.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Akahane's teaching by incorporating Garff's teaching of IGMP functional unit in the network. The motivation is that (as per Garff page 1 section 0003) Internet protocol (IP) multicast routers use an Internet Group Management Protocol (IGMP) to learn the multicast group memberships of neighboring nodes, as set forth in Internet Engineering Task Force Request for Comment 2236 entitled "Internet

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Group Management Protocol, Version 2," November 1997 (RFC 2236). The protocol exchange specified by IGMP to accomplish such learning involves the neighboring nodes sending to the IP multicast router membership reports indicating the multicast groups in which the neighboring nodes participate.

6. Prior art pertinent to the application but not used in office action:

- US 5519705 A USPAT Router for establishing connection among a plurality of LANs Fukutomi; Shoji
- US 20020129086 A1 US-PGPUB Cluster-based aggregated switching technique (CAST) for routing data packets and information objects in computer networks Garcia-Luna-Aceves, J.J. et al.
- US 20020150094 A1 US-PGPUB Hierarchical level-based internet protocol multicasting Cheng, Matthew et al.
- US 20020176387 A1 US-PGPUB Role-based IP multicast addressing in a wireless LAN Wilmer, Michael E. et al.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Salman Ahmed
Examiner
Art Unit 2666

SA

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